Application No. 10/612,037   Customer No. 01933
Response to Office Action

Listing of Claims:

1. (Currently Amended) An optical gain correction filter comprising:

a multilayer film structure formed by stacking a plurality of thin films with different ~~diffractive indexes~~ refractive
5   indices on a light transmitting board,

wherein when ~~the~~ light with ~~the~~ a wavelength λ enters at ~~the~~ an incident angle θ, ~~the~~ a transmissivity is assumed to be T1 (λ, θ) $(0 \leq T1 (\lambda, \theta) \leq 1)$, and ~~the~~ a thickness of each thin film is set to increase the transmissivity T1 (λ_0, θ) when the
10   incident angle θ increases close to ~~the~~ a predetermined maximum incident angle θmax with respect to the incident light with ~~the~~ a wavelength λ_0 entering the multilayer film structure.

2. (Currently Amended) The optical gain correction filter according to claim 1, wherein the plurality of thin films ~~which construct the multilayer film structure are formed by~~ comprise alternately ~~stacking~~ stacked SiO$_2$ films with ~~the~~ a
5   refractive index of 1.46 and TiO$_2$ films with ~~the~~ a refractive index of 2.3.

3. (Currently Amended) The optical gain correction filter according to claim 2, ~~having~~ wherein the transmissivity ~~of~~ is not

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more than 70% ~~or lower~~ so that the wavelength λ_0 of the incident

light coincides with ~~the~~ a position of a ripple of a band pass

filter.

4.   (Currently Amended) The optical gain correction filter

according to claim 1, wherein the thin films ~~which construct the~~

~~multilayer film structure are formed by~~ comprise alternately

~~combining~~ stacked (a) films made from one of SiO_2, MgF_2, Al_2O_3 ~~or~~

5   and SiO and (b) films made from one of TiO_2, CeO_2, ZrO_2, Ta_2O_5 ~~or~~

and ZnS.

5.   (Currently Amended) An optical gain correction filter

comprising:

     a multilayer film structure formed by stacking a plurality

of thin films with different ~~diffractive indexes~~ refractive

5   indices on a light transmitting board, wherein

     when ~~the~~ light with ~~the~~ a wavelength λ enters at ~~the~~ an

incident angle θ ~~the~~ a transmissivity is assumed to be $T1 (\lambda, \theta)$

$(0 \leq T1 (\lambda, \theta) \leq 1)$, and ~~the~~ a thickness of each thin film is set

to increase the transmissivity $T1 (\lambda, \theta_0)$ when the wavelength λ

10   increases close to ~~the~~ a predetermined maximum wavelength λmax

with respect to the incident light entering the multilayer

structure at ~~the~~ an incident angle of θ_0.

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6. (Currently Amended) The optical gain correction filter according to claim 5, wherein the plurality of thin films ~~which construct the multilayer film structure are formed by~~ comprise alternately ~~stacking~~ stacked SiO_2 films with ~~the~~ a refractive index of 1.46 and TiO_2 films with ~~the~~ a refractive index of 2.3.

7. (Currently Amended) The optical gain correction filter according to claim 6, ~~having~~ wherein the transmissivity ~~of~~ is not more than 70% ~~or lower~~ so that the wavelength λ_0 of the incident light coincides with ~~the~~ a position of a ripple of a band pass filter.

8. (Currently Amended) The optical gain correction filter according to claim 5, wherein the thin films ~~which construct the multilayer film structure are formed by~~ comprise alternately ~~combining~~ stacked (a) films made from one of SiO_2, MgF_2, Al_2O_3 ~~or~~ and SiO and (b) films made from one of TiO_2, CeO_2, ZrO_2, Ta_2O_5 ~~or~~ and ZnS.

9. (Currently Amended) An optical gain correction filter comprising:

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a multilayer film structure formed by stacking a plurality

of thin films with different ~~diffractive indexes~~ refractive

5   indices on a light ~~transmitting~~ reflecting board,

wherein when ~~the~~ light with ~~the~~ a wavelength λ enters at ~~the~~

an incident angle θ, ~~the~~ a reflectivity is assumed to be R1

(λ, θ) (0 ≤ R1 (λ, θ) ≤ 1), and ~~the~~ a thickness of each thin film

is set to increase the reflectivity R1 (λ_0, θ) when the incident

10   angle θ increases close to ~~the~~ a predetermined maximum incident

angle θmax with respect to the incident light with ~~the~~

a wavelength λ_0 entering the multilayer film structure.

10.   (Currently Amended) The optical gain correction filter

according to claim 9, wherein the plurality of thin films ~~which~~

~~construct the multilayer film structure are formed by~~

comprise alternately ~~stacking~~ stacked SiO_2 films with ~~the~~ a

5   refractive index of 1.46 and TiO_2 films with ~~the~~ a refractive

index of 2.3.

11.   (Currently Amended) The optical gain correction filter

according to claim 10, ~~having~~ wherein the ~~transmissivity of~~

reflectivity is not more than 70% ~~or lower~~ so that the

wavelength λ_0 of the incident light coincides with ~~the~~ a position

of a ripple of a band pass filter.

12.   (Currently Amended) The optical gain correction filter

according to claim 9, wherein the thin films ~~which construct the~~

~~multilayer film structure are formed by~~ <u>comprise</u> alternately

~~combining~~ <u>stacked (a) films made from</u> one of SiO_2, MgF_2, Al_2O_3 ~~or~~

5   <u>and</u> SiO and <u>(b) films made from</u> one of TiO_2, CeO_2, ZrO_2, Ta_2O_5 ~~or~~

<u>and</u> ZnS.

13.   (Currently Amended) An optical gain correction filter

comprising:

a multilayer film structure formed by stacking a plurality

of thin films with different ~~diffractive indexes~~ <u>refractive</u>

5 · <u>indices</u> on a light ~~transmitting~~ <u>reflecting</u> board,

wherein when ~~the~~ light with ~~the~~ <u>a</u> wavelength λ enters at ~~the~~

<u>an</u> incident angle θ, ~~the~~ <u>a</u> reflectivity is assumed to be R1

(λ, θ) (0 ≤ R1 (λ, θ) ≤ 1), and ~~the~~ <u>a</u> thickness of each thin film

is set to increase the reflectivity R1 (λ, $θ_0$) when the

10   wavelength λ increases close to ~~the~~ <u>a</u> predetermined maximum

wavelength λmax ~~wit~~ <u>with</u> respect to the incident light entering

the multilayer structure at ~~the~~ <u>an</u> incident angle of $θ_0$.

14.   (Currently Amended) The optical gain correction filter

according to claim 13, wherein the <u>plurality of</u> thin films ~~which~~

~~construct the multilayer film structure are formed by~~

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comprise alternately ~~stacking~~ stacked SiO₂ films with ~~the~~ a

5   refractive index of 1.46 and TiO₂ films with ~~the~~ a refractive

index of 2.3.

15.   (Currently Amended) The optical gain correction filter

according to claim 14, ~~having~~ wherein the ~~transmissivity of~~

reflectivity is not more than 70% ~~or lower~~ so that the

wavelength λ_0 of the incident light coincides with ~~the~~ a position

of a ripple of a band pass filter.

16.   (Currently Amended) The optical gain correction filter

according to claim 14, wherein the thin films ~~which construct the~~

~~multilayer film structure are formed by~~ comprise alternately

~~combining~~ stacked (a) films made from one of SiO₂, MgF₂, Al₂O₃ ~~or~~

5   and SiO and (b) films made from one of TiO₂, CeO₂, ZrO₂, Ta₂O₅ ~~or~~

and ZnS.

17.   (Currently Amended) An optical apparatus comprising:

[[,]]

a semiconductor laser light source ~~with the~~ which emits a

laser beam having a wavelength of λ_0;

5   a scanning section for scanning ~~a~~ the laser beam radiated

from the semiconductor laser light source;

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a photodetector for receiving scattered light from the

scanned laser beam; and

an optical gain correction filter, which is arranged on an

10   optical path from the semiconductor laser light source to the

photodetector, and ~~has~~ which comprises a multilayer film

structure formed by stacking a plurality of thin films with

different ~~diffractive indexes~~ refractive indices on a light

transmitting board; ~~, in which~~

15   wherein when light with ~~the~~ a wavelength λ enters at ~~the~~ an

incident angle θ, ~~the~~ a transmissivity is assumed to be T1 (λ, θ)

$(0 \leq T1 (\lambda, \theta) \leq 1)$, and ~~the~~ a thickness of said each thin film

is set to increase the transmissivity T1 (λ_0, θ) when the

incident angle θ increases close to ~~the~~ a predetermined maximum

20   incident angle θmax with respect to the incident light with ~~the~~

a wavelength λ_0 entering the multilayer film structure; and

wherein the optical gain correction filter is arranged ~~in~~

~~the direction~~ to increase the transmissivity T1 (λ, θ) as ~~the~~ an

incident angle of the scattered light increases.

18.   (Currently Amended) The optical apparatus according to

claim 17, wherein the optical gain correction filter is provided

~~on the optical path, and~~ one of: on ~~the~~ a reflection surface of

the scanning section, ~~or~~ and in front of the photodetector.

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19. (Currently Amended) An optical apparatus comprising: [[,]]

a semiconductor laser light source ~~with the~~ which emits a laser beam having a wavelength of λ_0;

5   a scanning section for scanning ~~a~~ the laser beam radiated from the semiconductor laser light source;

a photodetector for receiving scattered light from the scanned laser beam; and

an optical gain correction filter, which is arranged on an

10   optical path from the semiconductor laser light source to the photodetector, and ~~has~~ which comprises a multilayer film structure formed by stacking a plurality of thin films with different ~~diffractive indexes~~ refractive indices on a light ~~emitting~~ reflecting board; ~~, in which~~

15   wherein when light with ~~the~~ a wavelength λ enters at ~~the~~ an incident angle θ ~~the~~ a transmissivity is assumed to be T1 (λ, θ) $(0 \leq T1 (\lambda, \theta) \leq 1)$, and ~~the~~ a thickness of said each thin film is set to increase the transmissivity T1 (λ, θ_0) when the wavelength λ increases close to ~~the~~ a predetermined maximum

20   wavelength λmax with respect to the incident light entering the multilayer structure at ~~the~~ an incident angle of θ_0; and

wherein the optical gain correction filter is arranged ~~in the direction~~ to increase the transmissivity T1 (λ, θ) as ~~the~~ an incident angle of the scattered light increases.

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20.   (Currently Amended) The optical apparatus according to claim 19, wherein the optical gain correction filter is provided ~~on the optical path, and~~ one of: on ~~the~~ a reflection surface of the scanning section, ~~or~~ and in front of the photodetector.

21.   (Currently Amended) An optical apparatus comprising: [[,]]

a semiconductor laser light source ~~with the~~ which emits a laser beam having a wavelength of λ_0;

a scanning section for scanning ~~a~~ the laser beam radiated from the semiconductor laser light source;

a photodetector for receiving scattered light from the scanned laser beam; and

an optical gain correction filter, which is arranged on an optical path from the semiconductor laser light source to the photodetector, and ~~has~~ which comprises a multilayer film structure formed by stacking a plurality of thin films with different ~~diffractive indexes~~ refractive indices on a light reflecting board; ~~to transmit a light, in which~~

wherein when ~~a~~ light with ~~the~~ a wavelength λ enters at ~~the~~ an incident angle θ, ~~the~~ a reflectivity is assumed to be R1 (λ, θ) $(0 \le$ R1 $(\lambda, \theta) \le 1)$, and ~~the~~ a thickness of said each thin film is set to increase the reflectivity R1 (λ_0, θ) when the

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incident angle θ increases close to ~~the~~ a predetermined maximum

incident angle θmax with respect to the incident light with ~~the~~

a wavelength λ_0 entering the multilayer <u>film</u> structure; <u>and</u>

    wherein the optical gain correction filter is arranged ~~in~~

~~the direction~~ to increase the reflectivity R1 (λ, θ) as ~~the~~ <u>an</u>

incident angle of the scattered light increases.

    22.   (Currently Amended) The optical apparatus according to

claim 21, wherein the optical gain correction filter is provided

~~on the optical path, and~~ <u>one of:</u> on ~~the~~ <u>a</u> reflection surface of

the scanning section<u>,</u> ~~or~~ <u>and</u> in front of the photodetector.

    23.   (Currently Amended) An optical apparatus comprising<u>:</u>
[[,]]

    a semiconductor laser light source ~~with the~~ <u>which emits a</u>

<u>laser beam having a</u> wavelength of λ_0;

    a scanning section for scanning ~~a~~ <u>the</u> laser beam radiated

from the semiconductor laser light source;

    a photodetector for receiving scattered light from the

scanned laser beam; and   ,

    an optical gain correction filter, which is arranged on an

optical path from the semiconductor laser light source to the

photodetector, and ~~has~~ <u>which comprises</u> a multilayer film

structure formed by stacking a plurality of thin films with

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different ~~diffractive indexes~~ refractive indices on a light

~~transmitting~~ reflecting board; ~~, in which~~

    wherein when light with ~~the~~ a wavelength λ enters at ~~the~~ an

incident angle θ, ~~the~~ a reflectivity is assumed to be R1 (λ, θ)

(0 $\leq$ R1 (λ, θ) $\leq$ 1), and ~~the~~ a thickness of said each thin film

is set to increase the reflectivity R1 (λ, θ_0) when the

~~wavelengthλ~~ wavelength λ increases close to ~~the~~ a predetermined

maximum wavelength λmax ~~wit~~ with respect to the incident light

entering the multilayer structure at ~~the~~ an incident angle of θ_0;

and

    wherein the optical gain correction filter is arranged ~~in~~

~~the direction~~ to increase the reflectivity R1 (λ, θ) as ~~the~~ an

incident angle of the scattered light increases.

    24. (Currently Amended) The optical apparatus according to

claim 23, wherein the optical gain correction filter is provided

~~on the optical path, and~~ one of: on ~~the~~ a reflection surface of

the scanning section, ~~or~~ and in front of the photodetector.

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